

Energy Awareness Programs

State Energy Assessment Workshop

By:

DTE Energy Partnership & Services

The Culture of Energy Awareness.

- ❑ How do you identify the level of energy awareness in a facility ?
- ❑ Someone is aware of the utility costs.
- ❑ Someone takes responsibility for managing theses costs.
- ❑ Make sure to communicate these costs to the employees

Improve Facility Energy Awareness

Consider using the following types of information

- ❑ Summary Statistics
 - Overall energy cost, costs to operate equipment, environmental information related to energy use
- ❑ Sources of Energy
 - Most Americans do not know how the energy they use is generated
 - Provide information on the sources of energy used at your facility
- ❑ Energy use of equipment
 - Provide information on the energy performance of equipment or processes that employees regularly use as part of their jobs
 - E.g. personal computer
- ❑ Score cards
 - Compare energy performance across your organization to a national standard
 - ENERGY STAR Buildings Rating System

How do you create a culture of energy awareness.



- ❑ Make someone responsible for energy use – An Energy Champion
- ❑ Establish goals for energy reduction.
- ❑ Tie the compensation of the Energy Champion to the established goals.
- ❑ **Accountability !**
- ❑ Gain Management Support
- ❑ Identify key audiences, such as:
 - Executive management
 - Facilities managers
 - Operations managers

Energy Types

□ Primary Energy Types:

- Electric
- Natural Gas
- Coal
- Oil

□ Secondary Energy Types:

- Steam
- Compressed Air

Energy Costs

Electric:

- ❑ Deregulated / Regulated
- ❑ \$.045/kWh for large industrial tariffs
- ❑ Combination of demand and energy
- ❑ \$.06 to \$.10/kWh commercial and small industries
- ❑ \$.11/kWh residential
- ❑ Special rates available for heating, air conditioning.

Energy Costs

Natural Gas:

- ❑ Deregulated
- ❑ The most volatile priced energy
- ❑ Approximately \$6.50 / MMBTU
- ❑ Recent fluctuations between \$3.50 to \$9.00
- ❑ More environmentally friendly than coal
- ❑ Fuels most new electric generation.

Energy Costs

Coal:

- ❑ Price is starting to track with oil & natural gas
- ❑ More of an environmental impact.
- ❑ Approximately \$47 - \$94 / ton
- ❑ Compares favorably with natural gas & oil
- ❑ Fuels most old electric generation.

Coal

- ❑ The principal fuel for generating electricity in the United States
- ❑ Accounts for approximately 55% of total electricity output.
- ❑ The United States has more high-quality coal than any other country, with nearly 30% of the world's bituminous and anthracite coal reserves.
- ❑ The United States is one of the largest coal producers in world and U.S. exports make up a significant share of the world export market.

Energy Costs

Oil:

- ❑ Approaching \$2 / gallon
- ❑ Compares favorably with natural gas
- ❑ Fuels most standby electric generation.

Heating Oil price doubled in 12 months

NYMEX Heating Oil - Daily Price in 12 previous months



Energy Costs

Steam:

- ❑ A secondary utility
- ❑ Cost follows primary fuel
- ❑ Cost can vary substantially:
- ❑ \$4.00 / MMBU internal cost to generate
- ❑ As high as \$24.00 / Mlbs purchased over the fence.

Energy Costs

Compressed Air:

- ❑ A secondary utility
- ❑ Cost includes electric for primary driver, cooling tower
- ❑ pumps and fans, refrigerant dryers.
- ❑ Costs include water evaporated in cooling towers
- ❑ Typical \$0.17 to \$0.20 per MCF.

Energy Costs

Water:

- ❑ Not an energy – not free
- ❑ Widely used to move (and sometimes waste) energy
- ❑ Typical \$4.76 / mgal.
- ❑ Total cost will include wastewater processing.

Energy Usage

- ❑ Natural Gas, Oil, Coal – Heating, Steam generation.
Usually not economical for absorption chillers
- ❑ Electric – Motors, lighting, limited heating applications.
Usually not economical for heating.

Water Usage

- ❑ Domestic
- ❑ Process
- ❑ Transport medium for heating and cooling.
- ❑ Usually not economical for once through cooling

Energy Usage

- ❑ Compressed Air – motor applications in explosive atmospheres, blow offs, hand tools, pneumatic cylinders.
- ❑ Not economical for cooling, low pressure high volume blow offs.

Energy Related to the Environment

❑ Energy to Carbon Emissions

1.55 pounds CO₂ per kWh

(E.g.: 200,000 kWh x 1.55 lbs CO₂/kWh = 310,000 lbs of CO₂)

❑ Carbon Emissions to Cars

11,560 pounds CO₂ per car

(E.g.: 310,000 lbs CO₂ / 11,560 lbs CO₂/car = 27 cars)

❑ Example

Saving 200,000 kWh, is equivalent to:

Preventing 310,000 lbs of CO₂ emissions and

Removing the CO₂ emissions of 27 cars

Creating the Culture of Energy Awareness



- ❑ Identify Energy and Water consumption and costs.
- ❑ Circulate a memo to employees.
- ❑ Post reminders to turn off lights and equipment when not in use.
- ❑ Display posters with the conservation message.
- ❑ **Communication !**

STOP ENERGY



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Turn off the lights
when you leave the room



* 2000 Energy Impact Center Inc. & DTE

STOP ENERGY

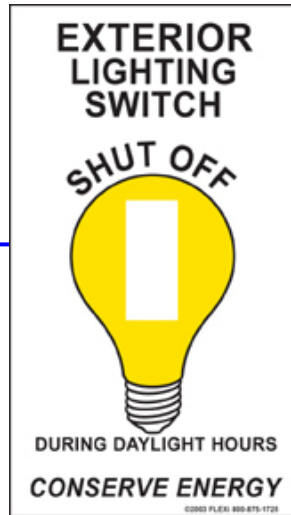


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Point out all Leaks.



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Creating the Culture of Energy Conservation



- ❑ Environmental Quality
 - Reduce global warming
 - Reduce Acid Rain
- ❑ Economic Competitiveness
 - Reduce production costs
 - Reduce industrial energy intensity
 - Create Jobs !
- ❑ Energy Security
 - Reduce imports of oil
 - Reduce vulnerability of an oil embargo.

Creating Employee Involvement

- ❑ Establish a suggestion program.
- ❑ Recognize employees for submitting a suggestion.
- ❑ Reward employees for implementation of an energy saving suggestion.
- ❑ **Participation!**



References

- www.energystar.gov
- Flexi Display

Any Questions ?
Thank you

